

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Original): A carrier for gene detection comprising:  
a base body; and  
a polynucleotide immobilized on said base body, said polynucleotide comprising a polynucleotide selected from the group consisting of:  
(at) the polynucleotide of Sequence ID No. 1 in the sequence listing;  
(bt) a modified polynucleotide derived from the polynucleotide (at) by including one or several deletions, substitutions or additions at any positions except for 455th position;  
(ct) a polynucleotide containing the sequence which spans from 441st to 455th position of Sequence ID No. 1;  
(dt) a polynucleotide containing the sequence which spans from 449the to 459th position of Sequence ID No. 1; and  
(et) a complementary strand of the polynucleotide selected from the group consisting of (at), (bt), (ct) and (dt) mentioned above.

Claim 2 (Original): A carrier for gene detection comprising:  
a base body; and  
a polynucleotide immobilized on said base body,  
said polynucleotide comprising a polynucleotide selected from the group consisting of:  
(ag) the polynucleotide of Sequence ID No. 2 in the sequence listing;  
(bg) a modified polynucleotide derived from the polynucleotide (ag) by including one or several deletions, substitutions or additions at any positions except for 455th position;

- (cg) a polynucleotide containing the sequence which spans from 441st to 455th position of Sequence ID No. 2;
- (dg) a polynucleotide containing the sequence which spans from 449th to 459th position of Sequence ID No. 2; and
- (eg) a complementary strand of the poly nucleotide selected from the group consisting of (ag), (bg), (cg) and (dg) mentioned above.

Claim 3 (Original): A carrier for gene detection comprising:  
a base body; and  
a polynucleotide immobilized on said base body,  
said polynucleotide comprising a polynucleotide selected from the group consisting of:

- (aa) the polynucleotide of Sequence ID No. 3 in the sequence listing;
- (ba) a modified polynucleotide derived from the polynucleotide (aa) by including one or several deletions, substitutions or additions at any positions except for 455th position;
- (ca) a polynucleotide containing the sequence which spans from 441st to 455th position of Sequence ID No. 3;
- (da) a polynucleotide containing the sequence which spans from 449th to 459th position of Sequence ID No. 3; and
- (ea) a complementary strand of the polynucleotide selected from the group consisting of (aa), (ba), (ca) and (da) mentioned above.

Claim 4 (Original): A carrier for gene detection comprising:  
a base body; and  
a polynucleotide immobilized on said base body,

said polynucleotide comprising a polynucleotide selected from the group consisting of:

- (ac) the polynucleotide of Sequence ID No. 4 in the sequence listing;
- (bc) a modified polynucleotide derived from the polynucleotide (ac) by including one or several deletions, substitutions or additions at any positions except for 455th position;
- (cc) a polynucleotide containing the sequence which spans from 441st to 455th position of Sequence ID No. 4;
- (dc) a polynucleotide containing the sequence which spans from 449th to 459th position of Sequence ID No. 4; and
- (ec) a complementary strand of the polynucleotide selected from the group consisting of (ac), (bc), (cc) and (dc) mentioned above.

Claim 5 (Original): The carrier for gene detection according to any one of claims 1 to 4, wherein the length of polynucleotide to be immobilized on said base body is no shorter than 15 nucleotides and no longer than 30 nucleotides.

Claim 6 (Original): The carrier for gene detection according to any one of claims 1 to 4, wherein said base body consisting of conductive substance, and said carrier for gene detection is used as an electrode.

Claim 7 (Original): A DNA chip comprising:  
a base body; and  
a first and a second electrodes formed on the base body,

said first electrode comprising a conductive body and at least one polynucleotide immobilized on said conductive body, the polynucleotide being selected from the group consisting of (at) to (et) shown below;

- (at) the polynucleotide of Sequence ID No. 1 in the sequence listing;
- (bt) a modified polynucleotide derived from the polynucleotide (at) by including one or several deletions, substitutions or additions at any positions except for 455th position;
- (ct) a polynucleotide containing the sequence which spans from 441st to 455th position of Sequence ID No. 1;
- (dt) a polynucleotide containing the sequence which spans from 449th to 459th position of Sequence ID No. 1; and
- (et) a complementary strand of the polynucleotide selected from the group consisting of (at), (bt), (ct) and (dt) mentioned above,

said second electrode comprising a conductive body, and at least one polynucleotide immobilized on said conductive body, the polynucleotide being selected from the group consisting of (ag) to (eg), (aa) to (ea), and (ac) to (ec) shown below;

- (ag) the polynucleotide of Sequence ID No. 2 in the sequence listing;
- (bg) a modified polynucleotide derived from the polynucleotide (ag) by including one or several deletions, substitutions or additions at any positions except for 455th position;
- (cg) a polynucleotide containing the sequence which spans from 441st to 455th position of Sequence ID No. 2;
- (dg) a polynucleotide containing the sequence which spans from 449th to 459th position of Sequence ID No. 2;
- (eg) a complementary strand of the poly nucleotide selected from the group consisting of (ag), (bg), (cg) and (dg) mentioned above;
- (aa) the polynucleotide of Sequence ID No. 3 in the sequence listing;

(ba) a modified polynucleotide derived from the polynucleotide (aa) by including one or several deletions, substitutions or additions at any positions except for 455th position;

(ca) a polynucleotide containing the sequence which spans from 441st to 455th position of Sequence ID No. 3;

(da) a polynucleotide containing the sequence which spans from 449th to 459th position of Sequence ID No. 3;

(ea) a complementary strand of the polynucleotide selected from the group consisting of (aa), (ba), (ca) and (da) mentioned above;

(ac) the polynucleotide of Sequence ID No. 4 in the sequence listing;

(bc) a modified polynucleotide derived from the polynucleotide (ac) by including one or several deletions, substitutions or additions at any positions except for 455th position;

(cc) a polynucleotide containing the sequence which spans from 441st to 455th position of Sequence ID No. 4;

(dc) a polynucleotide containing the sequence which spans from 449th to 459th position of Sequence ID No. 4; and

(ec) a complementary strand of the polynucleotide selected from the group consisting of (ac), (bc), (cc) and (dc) mentioned above.

**Claim 8 (Original):** The DNA chip according to claim 7, wherein the length of polynucleotide to be immobilized on said base body is no shorter than 15 nucleotides and no longer than 30 nucleotides.

**Claim 9 (Original):** A method for detecting validity of interferon therapy for an individual, comprising:

- 1) contacting a polynucleotide sample taken from said individual with said carrier for gene detection according to any one of claims 1, 2, 3 and 4; and
- 2) determining the nucleotide sequence of the polynucleotide in said sample, by detecting the hybridization reaction between said polynucleotide sample and the polynucleotide immobilized on said carrier for gene detection.

Claim 10 (Original): The method according to claim 9, further comprising:  
detecting that interferon therapy is valid for said individual if the nucleotide sequence of said sample polynucleotide determined by the determination step is that of the polynucleotide selected from the group consisting of:

- (at) the polynucleotide of Sequence ID No. 1 in the sequence listing;
- (bt) a modified polynucleotide derived from the polynucleotide (at) by including one or several deletions, substitutions or additions at any positions except for 455th position;
- (ct) a polynucleotide containing the sequence which spans from 441st to 455th position of Sequence ID No. 1;
- (dt) a polynucleotide containing the sequence which spans from 449th to 459th position of Sequence ID No. 1; and
- (et) a complementary strand of the polynucleotide selected from the group consisting of (at), (bt), (ct) and (dt) mentioned above.

Claim 11 (Original): The method according to claim 9, further comprising:  
labeling the polynucleotide sample taken from said individual with a marker, prior to the step of contacting the polynucleotide sample with the carrier for gene detection.

Claim 12 (Original): The method according to claim 11, wherein said marker comprises at least one selected from the group consisting of fluorescent dye, hapten, enzyme, radioisotope, and electrode active substance.

Claim 13 (Original): The method according to claim 9, wherein said carrier for gene detection is the carrier for gene detection of claim 6, and the detection of hybridization reaction in the step of determining nucleotide sequence of the polynucleotide in said sample is carried out by detecting electrochemical change accompanied with said hybridization reaction.

Claim 14 (Original): The method according to claim 13, wherein the detection of electrochemical change is carried out by measuring an electric signal generated between said carrier for gene detection and a counter electrode when voltage is applied between said carrier for gene detection and the counter electrode.

Claim 15 (Original): The method according to claim 14, wherein an electro-active double strand recognizer which specifically binds to a double strand polynucleotide is added to said hybridization reaction system, and the electric signal generated between said carrier for gene detection and said counter electrode is generated directly or indirectly from the electro-active double strand recognizer.

Claim 16 (Original): A method for detecting validity of interferon therapy for an individual, comprising:

- 1) contacting the probe polynucleotide to a carrier for gene detection which has a polynucleotide sample taken from said individual immobilized on a substrate; and

2) determining the nucleotide sequence of said polynucleotide sample by detecting the hybridization reaction between the polynucleotide sample immobilized on said substrate and said probe polynucleotide;

said probe polynucleotide comprising a polynucleotide selected from the group consisting of:

(at) the polynucleotide of Sequence ID No. 1 in the sequence listing;  
(bt) a modified polynucleotide derived from the polynucleotide (at) by including one or several deletions, substitutions or additions at any positions except for 455th position;

(ct) a polynucleotide containing the sequence which spans from 441st to 455th position of Sequence ID No. 1;

(dt) a polynucleotide containing the sequence which spans from 449th to 459th position of Sequence ID No. 1;

(et) a complementary strand of the polynucleotide selected from the group consisting of (at), (bt), (ct) and (dt) mentioned above;

(ag) the polynucleotide of Sequence ID No. 2 in the sequence listing;  
(bg) a modified polynucleotide derived from the polynucleotide (ag) by including one or several deletions, substitutions or additions at any positions except for 455th position;

(cg) a polynucleotide containing the sequence which spans from 441st to 455th position of Sequence ID No. 2;

(dg) a polynucleotide containing the sequence which spans from 449th to 459th position of Sequence ID No. 2;

(eg) a complementary strand of the poly nucleotide selected from the group consisting of (ag), (bg), (cg) and (dg) mentioned above;

(aa) the polynucleotide of Sequence ID No. 3 in the sequence listing;

- (ba) a modified polynucleotide derived from the polynucleotide (aa) by including one or several deletions, substitutions or additions at any positions except for 455th position;
- (ca) a polynucleotide containing the sequence which spans from 441st to 455th position of Sequence ID No. 3;
- (da) a polynucleotide containing the sequence which spans from 449th to 459th position of Sequence ID No. 3;
- (ea) a complementary strand of the polynucleotide selected from the group consisting of (aa), (ba), (ca) and (da) mentioned above;
- (ac) the polynucleotide of Sequence ID No. 4 in the sequence listing;
- (bc) a modified polynucleotide derived from the polynucleotide (ac) by including one or several deletions, substitutions or additions at any positions except for 455th position;
- (cc) a polynucleotide containing the sequence which spans from 441st to 455th position of Sequence ID No. 4;
- (dc) a polynucleotide containing the sequence which spans from 449th to 459th position of Sequence ID No. 4; and
- (ec) a complementary strand of the polynucleotide selected from the group consisting of (ac), (bc), (cc) and (dc) mentioned above.

Claim 17 (Original): A method according to claim 16, further comprising:  
detecting that interferon therapy is valid for said individual, when nucleotide sequence of said sample polynucleotide determined comprises the sequence of the polynucleotide selected from the group consisting of (at) to (et) below:

- (at) the polynucleotide of Sequence ID No. 1 in the sequence listing;
- (bt) a modified polynucleotide derived from the polynucleotide (at) by including one or several deletions, substitutions or additions at any positions except for 455th position;

(ct) a polynucleotide containing the sequence which spans from 441st to 455th position of Sequence ID No. 1;

(dt) a polynucleotide containing the sequence which spans from 449the to 459th position of Sequence ID No. 1; and

(et) a complementary strand of the polynucleotide selected from the group consisting of (at), (bt), (ct) and (dt) mentioned above.

Claim 18 (Original): The method according to claim 16, further comprising:  
labeling said probe polynucleotide with a marker, prior to the step of contacting it with the carrier for gene detection.

Claim 19 (Original): The method according to claim 18, wherein said marker comprises at least one selected from the group consisting of fluorescent dye, hapten, enzyme, radioisotope, and electrode active substance.

Claim 20 (Original): The method according to claim 16,  
wherein said carrier for gene detection is an electrode comprising a conductive base and said sample polynucleotide taken from said individual immobilized on the base, and  
detection of hybridization reaction in the step of determining nucleotide sequence of the sample polynucleotide is carried out by detecting electrochemical change accompanied with said hybridization reaction.

Claim 21 (Original): The method according to claim 20, wherein the detection of electrochemical change is carried out by measuring an electric signal generated between said

carrier for gene detection and a counter electrode when voltage is applied between the carrier for gene detection and a counter electrode.

Claims 9-22 (Canceled).

Claim 23 (Original): A gene detecting apparatus for detecting validity of interferon therapy comprising:

- a carrier for gene detection according to any one of claims 1, 2, 3, and 4;
- a reaction section for contacting a first polynucleotide immobilized on a base body of said carrier with a sample which contains a second polynucleotide labeled with a marker, and putting the first and the second polynucleotides under hybridization reaction condition; and
- a marker-detecting apparatus for detecting the marker attached to said second polynucleotide.

Claim 24 (Original): The apparatus according to claim 23, wherein said marker comprises at least one selected from the group consisting of fluorescent dye, hapten, enzyme, radioisotope, and electrode active substance.

Claim 25 (Original): A gene detecting apparatus for detecting validity of interferon therapy comprising:

- a carrier for gene detection of claim 6,
- a counter electrode,
- a voltage application means for applying voltage between said carrier for gene detection and said counter electrode,

a reaction section for contacting a first polynucleotide immobilized on a base body of said carrier with a sample which contains a second polynucleotide, and putting the first and the second polynucleotides under hybridization reaction condition; and

a measurement section for measuring an electric signal generated between said carrier for gene detection and said counter electrode when voltage is applied by said voltage applying means after said hybridization reaction.

Claim 26 (Original): The gene detecting apparatus according to claim 25, wherein an electro-active double strand recognizer which specifically binds to a double strand polynucleotide is added in said reaction section, and said electric signal is generated from said electro-active double strand recognizer.

Claim 27 (Original): A kit for detecting validity of interferon therapy comprising:  
a carrier for gene detection according to any one of claims 1, 2, 3, and 4; and  
a buffer solution.

Claim 28 (Original): A kit for detecting validity of interferon therapy comprising:  
a carrier for gene detection of claim 6;  
a double strand recognizer; and  
a buffer solution.